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The need to protect and conserve vulnerable marine ecosystems in areas beyond national jurisdiction

Submitted by the delegation of the Netherlands

Executive summary

The present document is intended to provide input for the discussions on the protection of vulnerable marine ecosystems at the fourth Meeting of the United Nations Open-ended Consultative Process on Oceans and the Law of the Sea. It addresses the need to improve the protection and conservation of vulnerable marine ecosystems in areas beyond national jurisdiction. It provides some examples of such ecosystems, the threats posed to them, the legal framework and applicable principles, as well as some of the main management approaches and tools for protection. The proposal identifies possible legal lacunae and emphasizes the need to use an integrative approach for the protection of vulnerable ecosystems beyond national jurisdiction.

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1. Introduction

1. The United Nations General Assembly, on 12 December 2002, on the basis of the recommendations of the third Meeting of the United Nations Open-ended Informal Consultative Process and the World Summit on Sustainable Development, adopted resolution 57/141, entitled "Oceans and the law of the sea", in which it encouraged relevant international and regional organizations "to consider urgently ways to integrate and improve, on a scientific basis, the management of risks to marine biodiversity of seamounts and certain other underwater features" within the framework of the United Nations Convention on the Law of the Sea (UNCLOS).[1]

2. As a follow-up to the current discussions, the Netherlands proposes to start a broader discussion on the necessity to protect ecosystems in areas beyond national jurisdiction as a whole, rather than on the protection of individual components of the ecosystem.

3. Areas beyond national jurisdiction include the high seas and the Area. The term "high seas" is used to refer to all parts of the sea that are not included in the internal waters, territorial sea, archipelagic waters or exclusive economic zone of States,[2] whereas the Area comprises the seabed and ocean floor and subsoil thereof beyond the limits of national jurisdiction, designated under UNCLOS as the common heritage of mankind.[3]

4. The present paper highlights the importance of the Plan of Implementation of the World Summit on Sustainable Development which calls for "actions at all levels, giving due regard to the relevant international instruments, to maintain the productivity and biodiversity of important and vulnerable marine and coastal areas, including in areas ... beyond national jurisdiction".[4]

5. In addition, the paper also acknowledges the importance of the results of the 2001 Vilm Experts Workshop on Managing Risks to Biodiversity and the Environment on the High Sea,[5] the 2003 Malaga workshop on High Seas Protected Areas[6] and the upcoming Workshop on High Seas Biodiversity to be held in Cairns, Australia, from 16 to 20 June 2003 and other relevant conferences and meetings addressing vulnerable marine ecosystems beyond national jurisdiction.

2. Examples of vulnerable marine ecosystems in areas beyond national jurisdiction

6. Vast expanses of the deep seabed and the open ocean lie beyond the limits of national jurisdiction. They comprise some of the least explored, rarely studied and potentially threatened ecosystems on earth, as well as some of the most intensively exploited living resources.[7] In this context, a number of relatively localized areas, geographic features, specific "habitats" and biological communities have been identified that, by virtue of their living and non-living resources, may be of particular scientific, societal or economic interest.[8] These features and habitats include hydrothermal vents, seamounts, deep-sea trenches, deep-sea coral reefs, polymetallic nodules, cold seeps and pockmarks, gas hydrates and submarine canyons. Many of these ecosystems are known to be rich in biodiversity and endemic species and may play an important role in food webs.[9] Species of concern include seabirds, cetaceans, deep-sea fish, sharks and other species of fish. It should be taken into account that these features are continuous and highly interconnected when developing a framework to protect them from severe adverse impacts resulting from manmade activities. The nature and intensity of severe impacts or pressures

vary from place to place, as does the vulnerability of different marine species and ecosystems.

7. Action has been recommended to protect several particularly vulnerable ecosystems.[10] Seamounts require special attention due to their widely distributed nature and their role as biological islands. Submarine canyons were mentioned given their intimate linkage with the "inshore" environment. Other deep seabed marine features mentioned were deep-sea coral reefs, hydrothermal vents, cold seeps and pockmarks.

8. Fishing activities form the main threat to species and ecosystems in areas beyond national jurisdiction.[11] Other sea-based activities that can have an adverse impact on marine ecosystems include the exploration and exploitation of non-living marine resources, such as oil and gas, and dumping at sea. Deep-sea trenches have been proposed as suitable sites for the disposal of such wastes as mining tailings, dredge spoils and excess industrial CO_2, owing to their isolation and supposed ability to retain waste materials. However, there are unknown risks, as trenches are tectonically active. Bioprospecting and the impacts from terrestrial pollutants and in particular the long-term effects of organic pollutants such as persistent organic pollutants (POPs) and endocrine-disrupting chemicals (EDCs), are the main potential threats to trench fauna.[12]

3. The international legal framework and applicable principles

9. UNCLOS and the Convention on Biological Diversity contain overall objectives, principles, obligations, concepts, measures and mechanisms that provide the building blocks for a specific framework to protect and maintain the productivity and biodiversity of vulnerable marine ecosystems in areas beyond national jurisdiction.

10. UNCLOS provides the international legal framework governing all activities in the oceans and seas. It includes a general obligation for States to protect and preserve the marine environment and marine living resources and other forms of marine life in particular. In addition, it includes a specific requirement for States to adopt measures "necessary to protect and preserve rare or fragile ecosystems as well as the habitat of depleted, threatened or endangered species and other forms of marine life".[13] It also requires States to cooperate directly and through competent international organizations for the conservation and sustainable use of marine living resources and the protection and preservation of the marine environment.[14] These obligations also apply to the high seas and the Area.

11. The regime of the high seas in UNCLOS is based on the principle of the freedom of the high seas, which allows all States to exercise, inter alia, the freedom of navigation, fishing and scientific research subject to their obligations under UNCLOS, other treaties and international law in general.[15] The Area and its resources are subject to the specific legal regime contained in Part XI of UNCLOS and the 1994 Agreement on the implementation of Part XI of UNCLOS. No State can claim sovereignty over any part of the high seas or over the Area and its resources.[16]

12. UNCLOS does not designate a single organization or authority to identify and protect vulnerable high seas ecosystems. As a general rule, all maritime activities conducted on the high seas are subject to the exclusive jurisdiction of the flag State

or the State whose nationals are involved.[17] This implies that it is the flag State that has the responsibility to regulate (potentially) harmful activities conducted on the high seas. The actual protection of vulnerable high seas ecosystems thus depends largely on cooperation among States, directly or through competent international organizations, and by using relevant international agreements and other instruments.

13. There is currently no single treaty that can be used to identify and protect all vulnerable ecosystems beyond national jurisdiction in an integrated manner. There are, however, a large number of global, regional and subregional treaties and organizations dealing with the protection and preservation of the marine environment, fisheries management, mining activities, shipping and other activities that offer opportunities to protect vulnerable high seas ecosystems.

14. The 1995 Agreement for the implementation of the provisions of UNCLOS relating to the conservation and management of straddling fish stocks and highly migratory fish stocks (1995 United Nations Fish Stocks Agreement) can be of considerable significance for the protection of vulnerable high seas ecosystems from fishing activities. It contains a detailed regime for the conservation and management of straddling fish stocks and highly migratory species, including general environmental principles such as the precautionary approach and the protection of marine biodiversity. Also of great significance are the various non-legally binding guiding instruments, such as the Code of Conduct on Responsible Fisheries, the four International Plans of Action, namely for the Management of Fishing Capacity, for the Conservation and Management of Sharks, for Reducing Incidental Catch of Seabirds in Longline Fisheries, and to Prevent, Deter and Eliminate Illegal, Unreported and Unregulated Fishing, and the Reykjavik Declaration on Responsible Fisheries in the Marine Ecosystem, that have been adopted under the auspices of the Food and Agriculture Organization of the United Nations (FAO). These are to be given effect through existing and new subregional and regional fisheries management organizations or arrangements and national action by States.

15. With regard to regulating mining activities in the Area, the International Seabed Authority plays an important role. It has the competence and the obligation to adopt measures to protect vulnerable deep-seabed ecosystems from mining activities and has already taken significant action in this direction. The regulation of activities that are not related to the mineral resources of the Area does not, however, fall within its competence.

16. The Convention on Biological Diversity supplements UNCLOS by providing a legal framework for the conservation of biological diversity, the sustainable use of its components and the fair and equitable sharing of benefits arising from the utilization of genetic resources. It contains overall goals, general principles and basic obligations for the Contracting Parties that are to be implemented at the national level on the basis of guidance provided by the institutions established under the Convention. Contracting Parties are required to implement their obligations under the Convention consistently with the rights and obligations of States under customary international law, as reflected in UNCLOS.

17. The Convention on Biological Diversity imposes few obligations upon the Contracting Parties that apply to areas beyond national jurisdiction, because its provisions do not apply to components of biological diversity (habitats and ecosystems, species and communities of species and genetic material) in those areas. They do, however, apply to processes and activities which have adverse effects on

biodiversity in areas beyond national jurisdiction that are carried out under the control or jurisdiction of a Contracting Party, i.e., by a State's nationals and/or vessels flying its flag. The Convention requires Contracting Parties to identify and monitor (potentially) harmful processes and activities and to regulate or manage them where a significant adverse effect on biological diversity has been determined.[18] Just like UNCLOS, it also recognizes the importance of cooperation between States, directly or through competent international organizations, in respect of areas beyond national jurisdiction and on other matters of mutual interest for the conservation and sustainable use of biological diversity.[19]

A legal framework for the conservation and sustainable use of genetic resources of the deep seabed beyond national jurisdiction

18. The provisions of UNCLOS and the Convention on Biological Diversity are complementary and mutually supportive, but they do not provide a specific legal regime for the conservation and sustainable use of marine genetic resources in deep seabed areas beyond national jurisdiction. The legal regime of Part XI of UNCLOS covers only the mineral resources, not the living and genetic resources found in the Area. The Convention on Biological Diversity does not apply to components of biodiversity outside national jurisdiction. The issue has been addressed in the framework of the Jakarta Mandate on the Conservation and Sustainable Use of Marine and Coastal Biological Diversity.[20] Following a request from the Conference of the Parties, the Executive Secretary of the Convention on Biological Diversity, in consultation with the Division for Ocean Affairs and the Law of the Sea of the Office of Legal Affairs of the United Nations, presented a study on this topic to the eighth meeting of the Subsidiary Body on Scientific, Technical and Technological Advice (SBBSTA).[21] The options for addressing these issues include, inter alia, maintaining the status quo, using the legal regime of the Area and its resources under UNCLOS as a framework and amending the Convention on Biological Diversity to extend its scope to components of biodiversity beyond national jurisdiction.

4. Management approaches and tools for protection in an integrated manner, especially for vulnerable ecosystems beyond national jurisdiction

19. There is a need for the further development of adequate management approaches and tools for the protection of marine ecosystems. During the past decades many protective management approaches have been developed for different marine and land-based ecosystems. The third Meeting of the Consultative Process called for "an integrated, interdisciplinary, intersectoral and *ecosystem-based* approach to oceans management" (emphasis added).[22] Furthermore, the Meeting identified "establishing guidelines for the application of the ecosystem approach" as one of the three potential areas for future task-oriented activities.[23]

20. As UNCLOS affirms, "the problems of ocean space are closely interrelated and need to be considered as a whole". Since these problems range across many fields, it is inevitable that many international institutions are involved. Particularly at the global level, cooperation and coordination are needed as a priority if effective interdisciplinary and intersectoral action is to be achieved. As more and more emphasis is placed upon implementation, the need for effective executive cooperation and coordination becomes ever stronger.

21. Several action or work plans have been recommended and implemented at the international, regional and national levels to protect and manage marine ecosystems applying an ecosystem approach.[24] In this respect, the North Sea could be seen as a pilot. Mainly within the framework of the Convention for the Protection of the Marine Environment of the North-East Atlantic (OSPAR), ecological quality objectives (EcoQOs) have been defined as a tool for setting clear operational environmental objectives. These objectives are directed towards specific management and serve as indicators for ecosystem health.[25]

22. Major fundamental discoveries in the open oceans and the deep seabed continue to be made. Detailed studies of biotic communities on the deep-sea floor off the eastern United States led to predictions that the global deep-sea floor alone might harbour several million species, with largely unknown ecological relationships.[26] This justifies the need for further research and assessment on the threats and importance of vulnerable high seas ecosystems. At the same time it underlines the importance of coordinating and integrating this progressive input for elaborating management approaches. The lack of knowledge of the biodiversity, ecological processes, values and vulnerability of certain natural resources and threats justifies protection and integrative management approaches in areas beyond national jurisdiction. A less anthropocentric view could be considered by applying the precautionary principle. Moreover, perceptions of what is vulnerable or of little value today may change in the future. The application of the precautionary approach is supported by the Convention on Biological Diversity. Furthermore, the 1995 United Nations Fish Stocks Agreement also requires States to be more cautious when information is uncertain, unreliable or inadequate and, in the absence of adequate scientific information, cannot be used as a reason for postponing or failing to take conservation and management measures.[27]

23. A more holistic approach, recognizing the interconnectivity of marine ecosystems, must be pricritized in any evaluation. Areas beyond national jurisdiction represent the largest habitat on earth, less than 1 per cent of the ocean's surface is currently legally protected and only a small portion is effectively managed. Therefore there is an urgent need to fill this gap by creating protected areas in areas beyond national jurisdiction as part of a global, ecologically representative marine protected area network. Because our knowledge of open ocean and deep-sea environments and the significant ecological processes that operate in these environments is still developing, any discussion on marine protected areas must acknowledge this limitation. High seas marine protected areas should be considered on the basis of the current state of knowledge. Consequently a precautionary approach is advisable.[28]

5. Recommendations

24. Based on the information present above and in accordance with the annotated provisional agenda, the Netherlands recommends immediate action for protecting vulnerable marine ecosystems in areas beyond national jurisdiction. The Netherlands would like to suggest that the Consultative Process consider the following questions:

- How can the protection of vulnerable ecosystems beyond national jurisdiction receive proper attention within the United Nations framework?

- How can knowledge and understanding about vulnerable ecosystems in areas beyond national jurisdiction and threats to them be improved?
- How can existing treaties and other relevant instruments be used to improve the protection of vulnerable marine ecosystems in areas beyond national jurisdiction, and what action should be taken to ensure the effective implementation of these instruments and to fill in the lacunae in the legal framework?
- How can an integrated ecosystem approach be made operational for areas beyond national jurisdiction?

Notes

[1] General Assembly resolution 57/141, para. 56.

[2] UNCLOS, article 86.

[3] Ibid., articles 1 (1) and 136.

[4] *Report of the World Summit on Sustainable Development, Johannesburg, South Africa, 26 August-4 September 2002* (United Nations publication, Sales No. E.03.II.A.1 and corrigendum), chap. I, resolution 2, annex, para. 32 (a).

[5] H. Thiel and A. Koslow (eds.), *Managing Risks to Biodiversity and the Environment on the High Sea, including Tools such as Marine Protected Areas — Scientific Requirements and Legal Aspects*, Proceedings of the Expert Workshop held at the International Academy for Nature Conservation, Isle of Vilm, Germany, 27 February-4 March (BfN-Skripten 43: 2001).

[6] Report on the World Conservation Union (IUCN), World Commission on Protected Areas (WCPA) and World Wildlife Fund (WWF) High Seas Marine Protected Areas Workshop, 15-17 January 2003, Malaga, Spain.

[7] Baker, C. M., Bett, B. J., Billett, D. S. M. and Rogers, A. D. (2001). An environmental perspective. In: WWF/IUCN/WCPA (eds.). *The status of natural resources on the high seas*. WWF/IUCN, Gland, Switzerland.

[8] Ibid.

[9] Kenyon, N. H. and the Shipboard Scientific Party of RV *Professor Logachev* TTR7 Cruise, 1999: Abstract. Effects of bottom trawling in deep water, west of Ireland and Scotland. In: Friend, P. and N. Kenyon (eds.). North-East Atlantic Slope Processes: Multi-Disciplinary Approaches. Incorporating IGCP Workshop 432, Contourites and Bottom Currents. 24-27 January. Southampton Oceanography Centre, Southampton, U.K. 45 pp.

[10] Ibid. See the report of the Secretary-General on oceans and the law of the sea to the United Nations General Assembly at its fifty-eighth session, A/58/65, sect. VI.C, in particular, paras. 180-184, 192 and 230. See also the report on the work of the United Nations Open-ended Informal Consultative Process at its third Meeting, May 2002, New York (A/57/80), paras. 19-25 and the summary of Discussion Panel A: Protection and preservation of the marine environment, at the third Meeting of the Consultative Process, Part I, paras. 54-60.

[11] GESAMP (2001), *A Sea of Troubles*, pp. 9-11.

[12] Gray, J. (1997). Marine Biodiversity: Patterns, Threats and Conservation Needs. GESAMP Reports and Studies No. 62.

[13] UNCLOS, articles 192 and 194 (5).

[14] Ibid., articles 118 and 197.

[15] Ibid., article 87.

[16] Ibid., articles 89 and 137 (1).

[17] Ibid., article 92.

[18] Convention on Biological Diversity, articles 7 (c) and 8 (l).

[19] Ibid., article 5.

[20] See A/51/312, annex II, decision II/10, para. 12.

[21] Study of the relationship between the Convention on Biological Diversity and the United Nations Convention on the Law of the Sea with regard to the conservation and sustainable use of genetic resources on the deep seabed. Note by the Executive Secretary, UNEP/CBD/SBSTTA/8/INF/3 of 6 January 2003.

[22] A/57/80, para. 4.

[23] Ibid., para. 90.

[24] UNEP, www.unep.org/eastafrica/docs/Workplan2002-theme3.cfm, IUCN, www.iucn.org/wp2003/documents/2003wp.pdf, North Sea, odin.dep.no/md/html/conf/consso/oslo_1998.html#2.9.

[25] See www.ospar.org/eng/html/publications/annual_report.htm.

[26] Merrett, N. R. and Haedrich, R. L. 1997. Deep-sea demersal fish and fisheries. London, Chapman & Hall.

[27] 1995 United Nations Fish Stocks Agreement, articles 6 (1) and 6 (2).

[28] News release, Malaga, Spain, 20 January 2003: "Deep thoughts for the high seas", see www.iucn.org.

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The safety of navigation; for example, capacity-building for the production of nautical charts

Submitted by the delegation of Norway

1. Many developing coastal States lack a national maritime administration and infrastructure and maritime institutes. Such States are in urgent need of the capacity to manage their responsibilities related to maritime safety, marine resources and the marine environment and thus to implement the 1982 United Nations Convention on the Law of the Sea and related instruments. A national maritime infrastructure and maritime institutes are also vital elements in providing opportunities for the development of new and improved commercial activities and attaining sustainable economic growth. Thus a good maritime infrastructure can contribute to:

- Sustainable economic growth in general
- Increased maritime efficiency and reduced transport costs
- Increased safety and reduced pollution
- Better coastal zone management
- Better planning and utilization of ocean resources (fisheries, minerals, oil and gas)
- Mapping of the ocean limits in accordance with the provisions of the United Nations Convention on the Law of the Sea
- Mitigating or eliminating border conflicts concerning continental shelf claims

2. Norway is a leading nation in maritime trade, development and competence and has over the past years received requests from many developing coastal States for assistance in developing their national maritime infrastructure and maritime institutes. Demands for such assistance are growing. International organizations such as the International Hydrographic Organization (IHO), the International Maritime Organization (IMO) and the International Association of Lighthouse

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Authorities (IALA) have also focused on the need for capacity-building and strengthening of the maritime infrastructure in developing countries.

3. The IHO strategy plan has defined the most important strategic goals as:

- Global coverage of hydrographic data for navigation, safety and environmental protection
- Build-up of the necessary capacity, especially in developing countries

The achievement of these goals will require a considerable level of support and assistance in building up the maritime sector in general (including an administrative framework, institutions, competence and capacity) and will necessarily take a long time.

4. The main obstacle for developing countries in establishing national maritime infrastructures and maritime institutes is, however, in finding donors.

5. For the production, updating and standardization of nautical charts, States need to establish a national hydrographic service/institute with the capacity to handle data acquisition, data and quality management, and production. Central elements in establishing the competencies for such tasks are both equipment and training. Training will normally be the most time- and cost-consuming. It will also be possible, of course, to purchase some of these services from consultants, but there will nevertheless be a need for a national body to evaluate the quality of the data and to manage data on behalf of the State.

6. To assist a State in establishing a hydrographic service/institute there must be a donor and a financial plan for the project. This requirement can be met through a maritime segment that would be included as part of a donor's assistance programme for developing countries. The most efficient and secure way to effect this is to establish a bilateral agreement with a national hydrographic service that is a member of IHO. The advantages of an agreement with a national hydrographic service would lie in the links not only to IHO, but also to other international organizations such as IMO and IALA.

7. One such bilateral agreement is that concluded between the Norwegian Hydrographic Service (NHS) and the Instituto Nacional de Hidrografia e Navegação of Mozambique. With financing by the Norwegian Development Agency (NORAD), NHS assisted Mozambique in establishing a national hydrographic service. This was a very successful project. Mozambique, together with South Africa, is the only country in the region which fulfils the requirements for membership of IHO. The large aluminium factory outside the capital, Maputo, needs nautical information at all times to ensure the safe shipment of raw materials and finished products in and out of Mozambican coastal waters respectively. Also, Beira harbour, as a transit harbour for the Beira corridor, at all times needs updated navigational information. Ships entering Beira harbour currently navigate on the margin of safety. Both the aluminium factory in Maputo and the Beira harbour/corridor make important contributions to the Mozambican economy. Mozambique today possesses all the necessary resources, skills and equipment to deal with hydrographic services and aids to navigation. Mozambique currently holds the chairmanship of the Southern Africa and Island Hydrographic Commission and is a member of the IHO strategic planning group.

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Protection and conservation of vulnerable marine ecosystems in areas beyond national jurisdiction

Submitted by the delegation of Norway

1. Future efforts to ensure the long-term conservation and sustainable use of deep-sea resources, improve cooperation between States to that end, avoid adverse impact on the marine environment, preserve biodiversity and maintain the integrity of marine ecosystems in the high seas must be based on the harmonization of treaty obligations and involve all relevant international organizations and treaty bodies. Any new regimes concerning deep-sea resources and ecosystems should be based on a global agreement building on the 1982 United Nations Convention on the Law of the Sea and modelled on the 1995 Agreement for the Implementation of the Provisions of the Convention relating to the Conservation and Management of Straddling Fish Stocks and Highly Migratory Fish Stocks. A global agreement for the implementation of the relevant provisions of the Convention on the Law of the Sea as well as other relevant conventions, such as the Convention on Biological Diversity, would best serve the purposes mentioned above and contribute to the maintenance of international peace and security.

2. The Plan of Implementation of the World Summit on Sustainable Development, as well as operative paragraph 53 of General Assembly resolution 57/141 of 12 December 2002, calls upon States to establish representative networks by 2012 of marine protected areas consistent with international law and time/area closures for the protection of nursery grounds and periods, proper coastal and land use and watershed planning and the integration of marine and coastal areas and management into key sectors.

3. Article 8 (a) of the Convention on Biological Diversity requires that parties, as far as possible, "establish a system of protected areas or areas where special measures need to be taken to conserve biological diversity". A protected area under that Convention differs from "a particular, clearly defined area", as mentioned in article 211, paragraph 6, of the Convention on the Law of the Sea, and is understood to be "a geographically defined area which is designated or regulated and managed

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to achieve specific conservation objectives" (see article 2 of the Convention on Biological Diversity). At the same time it is clear that with regard to the marine environment, the rights and obligations set out in the Convention on Biological Diversity must not be in conflict with those laid down in the Convention on the Law of the Sea (see article 22, paragraph 2). The establishment of protected areas in the high seas would appear to be in conflict with the prohibition of article 89 of that Convention, under which "no State may validly purport to subject any part of the high seas to its sovereignty". Equally, article 137, paragraph 3, states that no claim, acquisition or exercise of any rights with respect to minerals recovered from the Area by any State or natural or juridical person shall be recognized. Furthermore, it is quite clear that no marine scientific research activities can constitute the legal basis for any claim to any part of the marine environment or its resources.

4. It would thus appear that while States parties may undertake to designate protected areas under article 8 (a) of the Convention on Biological Diversity in areas under their jurisdiction and in accordance with the Convention on the Law of the Sea, no such areas can be established on the high seas. The Johannesburg Plan of Implementation cannot alter any of this.

Cold-water coral reefs and other particularly vulnerable deep-sea habitats

5. While the protection of warm-water coral reefs has been on the international agenda for many years, the less-known cold-water coral reefs have attracted less attention. However, some of the largest coral structures in the world are found in the cold and gloomy waters of the North-East Atlantic. These reefs are an example of a very vulnerable type of habitat. Biological diversity is particularly rich on these reefs, and they are of major importance for fisheries, for research and even as a source of marine genetic resources. It is therefore of utmost importance that they be given appropriate protection.

6. The cold-water reefs in Norwegian waters are located along the entire coast. In 1999 the Norwegian authorities established a provision for the protection of coral reefs under the law on saltwater fisheries and the law governing Norway's exclusive economic zone. The use of fishing gear that is dragged along the bottom and that may come in contact with the reefs is prohibited in the protected areas, as are other harmful practices. So far the protected reefs include the Sula Ridge, the Iver Ridge and the world's largest cold-water reef, the Rost reef, which was discovered in 2002. Norwegian authorities are working to identify and subsequently protect all reefs within its economic zone.

7. Norway believes that the need for protection of cold-water coral reefs should feature more prominently on the international environmental agenda in the years to come. Norway will work on these issues within the framework of the Convention for the Protection of the Marine Environment of the North-East Atlantic. Furthermore, maybe consideration should be given to including cold-water reefs in the work of the International Coral Reef Initiative along with warm-water reefs.

Other particularly vulnerable deep-sea habitats

8. Other particularly vulnerable deep-sea habitats are seamounts, hydrothermal vents (chemosynthetic ecosystems) and deep-sea trenches. Within the area of Norwegian jurisdiction there are no seamounts or hydrothermal vents similar to those known from the mid-Atlantic area further south. However, the extension of the

Mid-Atlantic Ridge from Iceland northward to the Arctic Ocean is an area of interest.

9. The term "seamount" usually refers to large isolated elevations of volcanic origin on the deep-sea floor. Several underwater highs that may be classified as seamounts have been identified in the new multibeam bathymetry data set for the Norwegian Sea acquired by the Norwegian Petroleum Directorate. These seamounts are related to the Mohns Ridge and the Knipowitch Ridge, the mid-ocean spreading ridges between Norway and Greenland north of Jan Mayen, and to a submarine ridge along the Jan Mayen fracture zone between the Vøring Plateau and Jan Mayen. These features rise from 1,100 to 2,200 metres from the sea floor, and their summits reach up to a water depth of 1,500 to 600 metres. A number of these seamounts are situated within the exclusive economic zone of Norway, and several others are located on the extended continental shelf of Norway, in the sense of article 76 of the Convention on the Law of the Sea. So far, the seamounts of the Norwegian Sea have not been the subject of systematic marine biological research, and their associated fauna is unknown. However, recent preliminary video studies by the Institute of Geosciences of the University of Bergen show very high biological activity, including a rich benthic fauna concentrated on these seamounts. Further research is of crucial importance for the assessment and future management of these resources.

10. Underwater hydrothermal vents are hot-water springs on the seabed associated with volcanic activity and are characteristic of the mid-ocean spreading ridges of the world's oceans. They are known to be the habitat of specialized fauna not seen anywhere else. Recently, earth scientists from the University of Bergen identified a very interesting hydrothermal vent with rich microbiological fauna on the Mohns Ridge just north of Jan Mayen. The scientists also found indications of several more vents along the Mohns and Knipowitch spreading ridges, and they expect that further research will confirm these and reveal still more. If this is the case, most of the vents will be located within the exclusive economic zone of Norway, and it is expected that some will also be identified on the Norwegian continental shelf beyond the zone. Again, further research is needed, for both scientific and management reasons.

11. Finally, there are no submarine trenches (in the sense of subduction zones) in the North Atlantic.